

Recommended Instream Environmental Flow Regimes and Related Recommendations (as of September 22, 2011) by the Nueces BBEST Instream Flow Subcommittee

For consideration and approval of the Nueces BBEST

1. Recommend using HEFR output derived from the full period of record at each site (Can live with this recommendation – Sam, Rocky, Ryan, David, Dave B., Tom, and Lonnie)
2. Flow regimes (Can live with these recommendations – Sam, Rocky, Ryan, David, Dave B., Tom, and Lonnie)
  - a. Edwards Plateau perennial streams: Nueces at Laguna, Frio at Concan, Dry Frio at Reagan, and Seco Creek
    - i. Base flows, 1/2 yr and 1/5 yr pulse flows from March 17, 2011 HEFR outputs, combined with 2/season, 1/season, 2/yr and 1/yr pulse flows from August 9, 2011 HEFR outputs
    - ii. Upper bound on duration for all pulse flows
  - b. Edwards Plateau intermittent streams: West Nueces at Bracketville, Leona, Sabinal at Sabinal, and Hondo Creek; South Texas Brush Country perennial streams: Nueces at Three Rivers and Atascosa River; and South Texas Brush Country intermittent streams: Nueces at Uvalde, Nueces at Cotulla, Nueces at Tilden, Frio at Derby, Frio at Calliham, Sabinal below the Edwards Outcrop, and San Miguel
    - i. 1/2 yr and 1/5 yr pulse flows from March 17, 2011 HEFR outputs, combined with base flows, 4/season, 3/season, 2/season, 1/season, 2/yr and 1/yr pulse flows from August 9, 2011 HEFR outputs
    - ii. Upper bound on duration for all pulse flows
  - c. Coastal Plains perennial streams: Nueces at Mathis, Oso, and San Fernando
    - i. Base flows, 1/2 yr and 1/5 yr pulse flows from March 17, 2011 HEFR outputs, combined with 2/season, 1/season, 2/yr and 1/yr pulse flows from August 9, 2011 HEFR outputs
    - ii. Upper bound on duration for all pulse flows
  - d. All HEFR values less than 1 will be rounded to 1
  - e. All subsistence and base flow values less than 10 and greater than 1 will be rounded to two significant figures.
  - f. All flow values greater than 99 will be rounded to three significant figures (**need to check minutes to confirm**)?
  - g. Flow values within  $\pm 10\%$  of the value in an adjacent season will be averaged and the average of those values will be used in the environmental flow regime. each the adjacent flow value will be averaged and
3. Proposed application rules (Can live with this recommendation – Sam, Rocky, Ryan, David, Dave B., and Tom)
  - No entity would be required to pass more water than the in-stream flow at the diversion point

- A pulse in any season replaces a seasonal pulse in each of the lower seasonal pulse categories. Ex. a 1/yr pulse in the spring eliminates the need for the 1/season, one of the 2/season, one of the 3/season, and one of the 4/season pulses.
- Hydrologic conditions:
  - a. Allow diversion to high base flow when 12-month cumulative antecedent flow exceeds the 75<sup>th</sup> percentile flow,
  - b. Allow diversion to the low base flow when 12-month cumulative antecedent flow is below the 25<sup>th</sup> percentile flow.
  - c. Allow diversion to the medium base flow when 12-month cumulative antecedent flow is equal to or less than the 75<sup>th</sup> percentile flow and greater than or equal to the 25<sup>th</sup> percentile flow,
  - d. Allow diversion to the subsistence flow when 12-month cumulative antecedent flow is below the 10<sup>th</sup> percentile flow
  - e. No diversion allowed when flow is equal to or less than subsistence flow

**Outstanding question:**

**Do we recommend the central tendency or the upper duration on the pulse flows?**



**Overbank Flows**  
 Qp: 15,600 cfs with Average Frequency 1 per 5 years  
 Regressed Volume is 54,390 to 280,918 (123,609)  
 Regressed Duration is 17 to 107 (43)

Qp: 4,750 cfs with Average Frequency 1 per 2 years  
 Regressed Volume is 17,039 to 87,605 (38,635)  
 Regressed Duration is 10 to 64 (26)

Qp: 2,220 cfs with Average Frequency 1 per year  
 Regressed Volume is 2,106 to 41,594 (18,362)  
 Regressed Duration is 7 to 46 (18)

**High Flow Pulses**  
 Qp: 393 cfs with Average Frequency 1 per season  
 Regressed Volume is 1,570 to 67,070 (3,087)  
 Regressed Duration is 4 to 17 (8)

Qp: 171 cfs with Average Frequency 1 per season  
 Regressed Volume is 599 to 3,099 (1,362)  
 Regressed Duration is 2 to 14 (6)

Qp: 99 cfs with Average Frequency 2 per season  
 Regressed Volume is 401 to 1,556 (790)  
 Regressed Duration is 2 to 9 (4)

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
High (75th %ile)	94 (42.5%)	86 (47.1%)	63 (64.9%)	44 (81.5%)	16 (99.0%)	76 (41.5%)	48 (56.8%)	32 (71.2%)	13 (95.7%)	97 (48.9%)	62 (64.4%)	41 (48.1%)
Medium (50th %ile)	69 (61.2%)	51 (78.9%)	14 (98.1%)									
Low (25th %ile)												
Subsistence												

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
High (75th %ile)	94 (42.5%)	86 (47.1%)	63 (64.9%)	44 (81.5%)	16 (99.0%)	76 (41.5%)	48 (56.8%)	32 (71.2%)	13 (95.7%)	97 (48.9%)	62 (64.4%)	41 (48.1%)
Medium (50th %ile)	69 (61.2%)	51 (78.9%)	14 (98.1%)									
Low (25th %ile)												
Subsistence												

Notes:  
 1. Period of Record used : 1/1/1924 to 12/31/2009.

NRLaguna19242009



	Flow Levels															
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov				
<b>Overbank Flows</b>	<p>Qp: 8,860 cfs with Average Frequency 1 per 5 Years            Regressed Volume is 33,290 to 185,554 (78,594)            Regressed Duration is 16 to 104 (41)</p> <p>Qp: 4,870 cfs with Average Frequency 1 per 2 Years            Regressed Volume is 17,621 to 97,965 (41,549)            Regressed Duration is 12 to 75 (30)</p> <p>Qp: 1,780 cfs with Average Frequency 1 per Year            Regressed Volume is 6,042 to 33,480 (14,223)            Regressed Duration is 7 to 44 (18)</p>															
<b>High Flow Pulses</b>	<p>Qp: 296 cfs with Average Frequency 1 per season            Regressed Volume is 1,017 to 3,519 (1,892)            Regressed Duration is 3 to 13 (5)</p> <p>Qp: 237 cfs with Average Frequency 1 per season            Regressed Volume is 626 to 5,939 (1,356)            Regressed Duration is 2 to 12 (5)</p> <p>Qp: 79 cfs with Average Frequency 1 per season            Regressed Volume is 228 to 2,052 (684)</p>															
<b>Base Flows (cfs)</b>	<p>Qp: 116 cfs with Average Frequency 2 per season            Regressed Volume is 271 to 1,424 (650)            Regressed Duration is 2 to 8 (4)</p>															
<b>Subsistence Flows (cfs)</b>	83 (43.5%)	63 (62.9%)	46 (40.2%)	11 (98.5%)	81 (45.2%)	59 (62.4%)	40 (80.3%)	9 (99.0%)	73 (41.1%)	47 (56.5%)	31 (70.8%)	9 (92.5%)	81 (48.5%)	55 (64.2%)	54 (78.6%)	9 (96.3%)
	<p>Winter: Dec, Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov</p> <p>Spring: May, Jun, Jul, Aug, Sep</p> <p>Summer: Jul, Aug, Sep, Oct</p> <p>Fall: Oct, Nov</p>															

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1931 to 12/31/2009.

FRConcan19312009

# Edwards perennial

**Overbank Events**

Qp: 538 cfs with Average Frequency 1 per year  
 Regressed Volume is 2,385 to 9,087 (4,655)  
 Regressed Duration is 10 to 38 (19)

Qp: 214 cfs with Average Frequency 2 per year  
 Regressed Volume is 921 to 3,504 (1,797)  
 Regressed Duration is 6 to 26 (13)

Qp: 117 cfs with Average Frequency 1 per season  
 Regressed Volume is 467 to 1,473 (829)  
 Regressed Duration is 4 to 16 (8)

Qp: 81 cfs with Average Frequency 1 per season  
 Regressed Volume is 330 to 1,100 (502)  
 Regressed Duration is 4 to 15 (8)

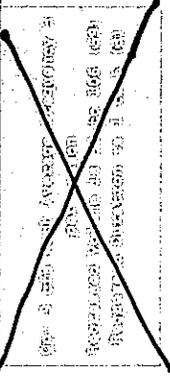
Qp: 35 cfs with Average Frequency 1 per season  
 Regressed Volume is 151 to 617 (305)  
 Regressed Duration is 3 to 13 (6)

**High Flow Pulses**

Qp: 32 cfs with Average Frequency 1 per season  
 Regressed Volume is 144 to 650 (306)  
 Regressed Duration is 3 to 13 (7)

Qp: 30 cfs with Average Frequency 2 per season  
 Regressed Volume is 118 to 372 (210)  
 Regressed Duration is 2 to 9 (5)

Qp: 12 cfs with Average Frequency 2 per season  
 Regressed Volume is 48 to 159 (87)  
 Regressed Duration is 2 to 7 (4)



	Year											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Base Flows (cfs)	Winter											
	17 (42.9%)	12 (62.0%)	7.2 (80.4%)	0.65 (99.2%)	1.1 (97.7%)	5 (80.0%)	9.3 (63.5%)	16 (47.5%)	1.4 (43.9%)	7.9 (58.1%)	4.1 (71.2%)	11 (67.8%)
Subsistence Flows (cfs)	Summer											
	0.65 (99.2%)	1.1 (97.7%)	5 (80.0%)	9.3 (63.5%)	16 (47.5%)	1.4 (43.9%)	7.9 (58.1%)	4.1 (71.2%)	11 (67.8%)	18 (50.6%)	0.6 (97.2%)	0.6 (97.2%)

**Flow Levels**

High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1953 to 12/31/2009.

DFRR19532009

	Winter			Spring			Summer			Fall						
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov				
<b>Overbank Flows</b>	<p>Qp: 2,970 cfs with Average Frequency 1 per 5 years            Regressed Volume is 13,886 to 53,187 (27,176)            Regressed Duration is 21 to 82 (41)</p> <p>Qp: 1,700 cfs with Average Frequency 1 per 2 years            Regressed Volume is 7,812 to 29,863 (15,274)            Regressed Duration is 16 to 64 (32)</p> <p>Qp: 538 cfs with Average Frequency 1 per year            Regressed Volume is 2,385 to 9,087 (4,655)            Regressed Duration is 10 to 38 (19)</p>															
<b>High Flow Pulses</b>	<p>Qp: 32 cfs with Average Frequency 1 per season            Regressed Volume is 144 to 630 (306)            Regressed Duration is 3 to 13 (7)</p> <p>Qp: 117 cfs with Average Frequency 1 per season            Regressed Volume is 467 to 1,473 (829)            Regressed Duration is 4 to 16 (8)</p> <p>Qp: 81 cfs with Average Frequency 1 per season            Regressed Volume is 330 to 1,100 (602)            Regressed Duration is 1 to 15 (8)</p> <p>Qp: 35 cfs with Average Frequency 1 per season            Regressed Volume is 151 to 617 (305)</p>															
<b>Base Flows (cfs)</b>	<p>Qp: 36 cfs with Average Frequency 2 per season            Regressed Volume is 372 (240)            Regressed Duration is 2 to 9 (5)</p> <p>Qp: 12 cfs with Average Frequency 2 per season            Regressed Volume is 48 to 159 (87)            Regressed Duration is 2 to 7 (4)</p>															
<b>Subsistence Flows (cfs)</b>	17 (42.9%)	12 (62.0%)	7.2 (80.4%)	0.65 (99.2%)	1.1 (97.7%)	5 (80.0%)	9.3 (63.5%)	16 (47.5%)	14 (43.9%)	7.9 (58.1%)	4.1 (71.2%)	0.6 (92.0%)	18 (50.6%)	11 (67.8%)	6.5 (80.1%)	0.6 (92.2%)

Flow Levels	
High (75th %ile)	
Medium (50th %ile)	
Low (25th %ile)	
Subsistence	

Notes:  
 1. Period of Record used : 1/1/1953 to 12/31/2009.

DFRReagan19532009

# Edwards perennial

Overbank Events	Qp: 313 cfs with Average Frequency 1 per year Regressed Volume is 1,458 to 5,066 (2,718) Regressed Duration is 8 to 31 (16)	Qp: 121 cfs with Average Frequency 2 per year Regressed Volume is 493 to 1,709 (918) Regressed Duration is 6 to 21 (11)	Qp: 91 cfs with Average Frequency 1 per season Regressed Volume is 347 to 1,137 (628) Regressed Duration is 4 to 17 (8)	Qp: 38 cfs with Average Frequency 1 per season Regressed Volume is 122 to 360 (210) Regressed Duration is 4 to 11 (6)	Qp: 23 cfs with Average Frequency 1 per season Regressed Volume is 69 to 270 (136) Regressed Duration is 3 to 11 (5)
High Flow Pulses	Qp: 21 cfs with Average Frequency 1 per season Regressed Volume is 82 to 291 (155) Regressed Duration is 3 to 12 (6)	Qp: 9 cfs with Average Frequency 2 per season Regressed Volume is 29 to 100 (54) Regressed Duration is 2 to 8 (4)	Qp: 11 cfs with Average Frequency 2 per season Regressed Volume is 31 to 93 (54) Regressed Duration is 2 to 7 (4)	Qp: 7 cfs with Average Frequency 2 per season Regressed Volume is 17 to 65 (33) Regressed Duration is 2 to 6 (3)	
Base Flows (cfs)	6.1 (41.4%) 3.6 (60.3%) 2 (80.2%)	6.7 (50.7%) 2.8 (68.2%) 1.2 (83.6%)	6.4 (40.8%) 2.8 (57.6%) 1.3 (73.2%)	0.02 (92.9%)	0.05 (98.6%)
Subsistence Flows (cfs)					

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
1. Period of Record used : 1/1/1962 to 12/31/2009.

SCU19622009

	Flow Data											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
<b>Overbank Flows</b>	<p>Qp: 1,600 cfs with Average Frequency 1 per 5 Years            Regressed Volume is 9,382 to 32,741 (17,527)            Regressed Duration is 16 to 62 (32)</p> <p>Qp: 698 cfs with Average Frequency 1 per 2 Years            Regressed Volume is 3,641 to 12,676 (6,794)            Regressed Duration is 12 to 44 (22)</p> <p>Qp: 313 cfs with Average Frequency 1 per year            Regressed Volume is 1,458 to 5,066 (2,718)            Regressed Duration is 8 to 31 (16)</p>											
<b>High Flow Pulses</b>	<p>Qp: 21 cfs with Average Frequency 1 per season            Regressed Volume is 82 to 291 (155)            Regressed Duration is 3 to 12 (6)</p> <p>Qp: 91 cfs with Average Frequency 1 per season            Regressed Volume is 347 to 1,137 (628)            Regressed Duration is 4 to 17 (8)</p> <p>Qp: 38 cfs with Average Frequency 1 per season            Regressed Volume is 122 to 360 (210)            Regressed Duration is 4 to 11 (6)</p> <p>Qp: 23 cfs with Average Frequency 1 per season            Regressed Volume is 69 to 270 (136)            Regressed Duration is 7 to 23 (13)</p>											
<b>Base Flows (cfs)</b>	<p>Qp: 9 cfs with Average Frequency 2 per season            Regressed Volume is 28 to 100 (64)            Regressed Duration is 2 to 8 (4)</p> <p>Qp: 10 cfs with Average Frequency 2 per season            Regressed Volume is 111 to 334 (241)            Regressed Duration is 3 to 7 (4)</p> <p>Qp: 14 cfs with Average Frequency 2 per season            Regressed Volume is 31 to 99 (64)            Regressed Duration is 3 to 7 (4)</p>											
<b>Subsistence Flows (cfs)</b>	<p>6.1 (41.4%)            3.6 (60.3%)            2 (80.2%)            0.05 (98.7%)</p> <p>6.7 (50.7%)            2.8 (68.2%)            1.2 (83.6%)            0.06 (97.7%)</p> <p>6.4 (40.8%)            2.8 (67.6%)            1.3 (73.2%)            0.02 (92.9%)</p> <p>6.8 (44.9%)            3.6 (64.1%)            1.3 (81.7%)            0.05 (98.6%)</p>											

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1962 to 12/31/2009.

SCUtopia19622009

# Edwards intermittent

Overbank Events	Frequency 1 per year											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
High Flow Pulses	<p>Qp: 794 cfs with Average Frequency 1 per year                      Regressed Volume is 3,162 to 12,144 (6,197)                      Regressed Duration is 7 to 30 (15)</p> <p>Qp: 326 cfs with Average Frequency 2 per year                      Regressed Volume is 1,182 to 4,534 (2,315)                      Regressed Duration is 5 to 22 (10)</p>											
	<p>Qp: 291 cfs with Average Frequency 1 per season                      Regressed Volume is 977 to 3,364 (1,813)                      Regressed Duration is 4 to 18 (9)</p> <p>Qp: 90 cfs with Average Frequency 1 per season                      Regressed Volume is 262 to 889 (483)                      Regressed Duration is 3 to 12 (6)</p> <p>Qp: 24 cfs with Average Frequency 2 per season                      Regressed Volume is 65 to 220 (119)                      Regressed Duration is 2 to 7 (4)</p> <p>Qp: 13 cfs with Average Frequency 2 per season                      Regressed Volume is 32 to 122 (82)                      Regressed Duration is 1 to 6 (3)</p>											
Base Flows (cfs)	<p>Qp: 61 cfs with Average Frequency 1 per season                      Regressed Volume is 245 to 1,023 (500)                      Regressed Duration is 3 to 15 (7)</p> <p>Qp: 16 cfs with Average Frequency 2 per season                      Regressed Volume is 47 to 197 (97)                      Regressed Duration is 2 to 8 (4)</p>											
	<p>Qp: 16 cfs with Average Frequency 1 per season                      Regressed Volume is 47 to 197 (97)                      Regressed Duration is 2 to 8 (4)</p> <p>Qp: 30 cfs with Average Frequency 1 per season                      Regressed Volume is 100 to 304 (166)                      Regressed Duration is 2 to 9 (6)</p> <p>Qp: 4 cfs with Average Frequency 1 per season                      Regressed Volume is 20 to 80 (40)                      Regressed Duration is 1 to 4 (2)</p>											
Subsistence Flows (cfs)	<p>Qp: 6 cfs with Average Frequency 4 per season                      Regressed Volume is 15 to 52 (28)                      Regressed Duration is 1 to 5 (2)</p>											
	<p>15 (41.9%)                      6.4 (60.2%)                      2.9 (79.6%)                      0 (100.0%)</p> <p>17 (51.9%)                      5.2 (68.2%)                      1.2 (83.1%)                      0 (100.0%)</p> <p>17 (38.3%)                      9 (54.1%)                      1.9 (70.5%)                      0 (100.0%)</p> <p>15 (43.2%)                      7.9 (61.2%)                      2.5 (79.3%)                      0 (100.0%)</p>											
<p>Flow Levels</p> <p>High (75th %ile)</p> <p>Medium (50th %ile)</p> <p>Low (25th %ile)</p> <p>Subsistence</p>												

Notes:  
 1. Period of Record used : 1/1/1953 to 12/31/2009.

HCT19532009

	Flow Levels											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
<b>Overbank Flows</b>	<p>Qp: 3,340 cfs with Average Frequency 1 per 5 Years            Regressed Volume is 15,470 to 59,595 (30,363)            Regressed Duration is 12 to 51 (25)</p> <p>Qp: 1,470 cfs with Average Frequency 1 per 2 years            Regressed Volume is 6,246 to 24,017 (12,248)            Regressed Duration is 9 to 38 (18)</p> <p>Qp: 794 cfs with Average Frequency 1 per year            Regressed Volume is 3,162 to 12,144 (6,197)            Regressed Duration is 7 to 30 (15)</p>											
<b>High Flow Pulses</b>	<p>Qp: 61 cfs with Average Frequency 1 per season            Regressed Volume is 245 to 1,023 (500)            Regressed Duration is 3 to 15 (7)</p> <p>Qp: 291 cfs with Average Frequency 1 per season            Regressed Volume is 977 to 3,364 (1,813)            Regressed Duration is 4 to 18 (9)</p> <p>Qp: 90 cfs with Average Frequency 1 per season            Regressed Volume is 262 to 889 (483)            Regressed Duration is 3 to 12 (6)</p> <p>Qp: 50 cfs with Average Frequency 1 per season            Regressed Volume is 149 to 575 (293)</p>											
<b>Base Flows (cfs)</b>	<p>Qp: 16 cfs with Average Frequency 2 per season            Regressed Volume is 41 to 107 (97)            Regressed Duration is 2 to 8 (4)</p> <p>Qp: 24 cfs with Average Frequency 2 per season            Regressed Volume is 275 to 220 (410)            Regressed Duration is 2 to 7 (4)</p> <p>Qp: 13 cfs with Average Frequency 2 per season            Regressed Volume is 32 to 122 (62)            Regressed Duration is 2 to 12 (5)</p>											
<b>Subsistence Flows (cfs)</b>	<p>15 (41.9%)            6.4 (60.2%)            2.9 (79.6%)            0 (100.0%)</p> <p>17 (51.9%)            5.2 (68.2%)            1.2 (83.1%)            0 (100.0%)</p> <p>17 (38.3%)            9 (54.1%)            1.9 (70.5%)            0 (100.0%)</p> <p>15 (43.2%)            7.9 (61.2%)            2.5 (79.3%)            0 (100.0%)</p>											
Winter												
Spring												
Summer												
Fall												

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

- Notes:
1. Period of Record used : 1/1/1953 to 12/31/2009.
  2. Volumes are in acre-feet and durations are in days.

HCTarpley19532009

# Edwards intermittent

Overbank Events	<p>Qp: 1,020 cfs with Average Frequency 1 per year                      Regressed Volume is 3,838 to 17,909 (8,291)                      Regressed Duration is 7 to 38 (17)</p> <p>Qp: 329 cfs with Average Frequency 2 per year                      Regressed Volume is 1,164 to 5,422 (2,513)                      Regressed Duration is 5 to 24 (10)</p> <p>Qp: 177 cfs with Average Frequency 1 per season                      Regressed Volume is 644 to 2,207 (1,192)                      Regressed Duration is 4 to 15 (7)</p> <p>Qp: 64 cfs with Average Frequency 2 per season                      Regressed Volume is 219 to 750 (405)                      Regressed Duration is 2 to 10 (5)</p> <p>Qp: 53 cfs with Average Frequency 1 per season                      Regressed Volume is 177 to 840 (386)                      Regressed Duration is 2 to 12 (5)</p>											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
High Flow Pulses	<p>Qp: 62 cfs with Average Frequency 1 per season                      Regressed Volume is 232 to 1,532 (596)                      Regressed Duration is 3 to 17 (7)</p> <p>Qp: 100 cfs with Average Frequency 1 per season                      Regressed Volume is 286 to 1,178 (581)                      Regressed Duration is 2 to 12 (5)</p> <p>Qp: 11 cfs with Average Frequency 2 per season                      Regressed Volume is 31 to 127 (62)                      Regressed Duration is 1 to 5 (2)</p>											
	Base Flows (cfs)	35 (41.7%)	22 (59.2%)	11 (77.8%)	0 (100.0%)	35 (46.4%)	20 (63.3%)	7.7 (79.9%)	0 (100.0%)	29 (39.9%)	13 (55.6%)	3.2 (70.4%)
Subsistence Flows (cfs)	<p>Qp: 40 cfs with Average Frequency 1 per season                      Regressed Volume is 200 to 200 (200)                      Regressed Duration is 2 to 2 (2)</p>											
	Subsistence Flows (cfs)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)
<p>Flow Levels</p> <p>High (75th %ile)</p> <p>Medium (50th %ile)</p> <p>Low (25th %ile)</p> <p>Subsistence</p>												

Notes:  
 1. Period of Record used: 1/1/1943 to 12/31/2009.

SRS19432009

	Winter			Spring			Summer			Fall		
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
<b>Overbank Flows</b>	<p>Qp: 5,200 cfs with Average Frequency 1 per 5 Years            Regressed Volume is 21,350 to 100,135 (46,237)            Regressed Duration is 15 to 75 (33)</p> <p>Qp: 2,350 cfs with Average Frequency 1 per 2 Years            Regressed Volume is 9,249 to 43,253 (20,001)            Regressed Duration is 11 to 54 (24)</p> <p>Qp: 1,020 cfs with Average Frequency 1 per year            Regressed Volume is 3,838 to 17,909 (8,291)            Regressed Duration is 7 to 38 (17)</p>											
<b>High Flow Pulses</b>	<p>Qp: 62 cfs with Average Frequency 1 per season            Regressed Volume is 232 to 1,532 (596)            Regressed Duration is 3 to 17 (7)</p> <p>Qp: 177 cfs with Average Frequency 1 per season            Regressed Volume is 644 to 2,207 (1,192)            Regressed Duration is 4 to 15 (7)</p> <p>Qp: 100 cfs with Average Frequency 1 per season            Regressed Volume is 286 to 1,178 (581)            Regressed Duration is 2 to 12 (5)</p> <p>Qp: 53 cfs with Average Frequency 1 per season            Regressed Volume is 177 to 840 (386)</p>											
<b>Base Flows (cfs)</b>	<p>Qp: 62 cfs with Average Frequency 1 per season            Regressed Volume is 232 to 1,532 (596)            Regressed Duration is 3 to 17 (7)</p> <p>Qp: 177 cfs with Average Frequency 1 per season            Regressed Volume is 644 to 2,207 (1,192)            Regressed Duration is 4 to 15 (7)</p> <p>Qp: 100 cfs with Average Frequency 1 per season            Regressed Volume is 286 to 1,178 (581)            Regressed Duration is 2 to 12 (5)</p> <p>Qp: 53 cfs with Average Frequency 1 per season            Regressed Volume is 177 to 840 (386)</p>											
<b>Subsistence Flows (cfs)</b>	<p>Qp: 62 cfs with Average Frequency 1 per season            Regressed Volume is 232 to 1,532 (596)            Regressed Duration is 3 to 17 (7)</p> <p>Qp: 177 cfs with Average Frequency 1 per season            Regressed Volume is 644 to 2,207 (1,192)            Regressed Duration is 4 to 15 (7)</p> <p>Qp: 100 cfs with Average Frequency 1 per season            Regressed Volume is 286 to 1,178 (581)            Regressed Duration is 2 to 12 (5)</p> <p>Qp: 53 cfs with Average Frequency 1 per season            Regressed Volume is 177 to 840 (386)</p>											

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1943 to 12/31/2009.  
 2. Volumes are in acre-feet and durations are in days.

SRSabinal19432009

# Edwards intermittent

## Overbank Events

Qp: 1,020 cfs with Average Frequency 1 per year  
 Regressed Volume is 2,492 to 9,265 (4,805)  
 Regressed Duration is 6 to 31 (13)

Qp: 25 cfs with Average Frequency 2 per year  
 Regressed Volume is 97 to 360 (187)  
 Regressed Duration is 3 to 16 (7)

Qp: 5 cfs with Average Frequency 1 per season  
 Regressed Volume is 19 to 76 (38)  
 Regressed Duration is 2 to 10 (5)

Qp: 5 cfs with Average Frequency 1 per season  
 Regressed Volume is 24 to 84 (45)  
 Regressed Duration is 2 to 13 (5)

## High Flow Pulses

### Base Flows (cfs)

1.5 (18.6%)	1.2 (24.9%)	1.7 (28.8%)	1.6 (32.7%)
0.49 (31.6%)	0.51 (35.4%)	0.57 (38.0%)	0.48 (44.6%)
0.15 (45.2%)	0.2 (46.2%)	0.15 (47.4%)	0.16 (56.6%)

### Subsistence Flows (cfs)

0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)
------------	------------	------------	------------

Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Winter						Spring			Summer		Fall

### Flow Levels

High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

### Notes:

1. Period of Record used: 1/1/1946 to 12/31/2009.

WNRB19462009\_LT3UT0.9MM1.25

	Flow Data											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
<b>Overbank Flows</b>	<p>Qp: 11,200 cfs with Average Frequency 1 per 5 years            Regressed Volume is 33,622 to 136,090 (67,644)            Regressed Duration is 18 to 92 (41)</p> <p>Qp: 4,090 cfs with Average Frequency 1 per 2 years            Regressed Volume is 12,504 to 50,535 (25,138)            Regressed Duration is 15 to 75 (33)</p> <p>Qp: 1,020 cfs with Average Frequency 1 per year            Regressed Volume is 3,197 to 12,899 (6,422)            Regressed Duration is 11 to 57 (26)</p>											
<b>High Flow Pulses</b>	<p>Qp: 1 cfs with Average Frequency 1 per season            Regressed Volume is 3 to 13 (6)            Regressed Duration is 3 to 14 (6)</p> <p>Qp: 3 cfs with Average Frequency 1 per season            Regressed Volume is 12 to 43 (23)            Regressed Duration is 4 to 17 (8)</p> <p>Qp: 2 cfs with Average Frequency 1 per season            Regressed Volume is 8 to 29 (15)            Regressed Duration is 3 to 19 (8)</p> <p>Qp: 0 cfs with Average Frequency 1 per season            Regressed Volume is 0 to 0 (0)            Regressed Duration is 0 to 0 (0)</p> <p>Qp: 0 cfs with Average Frequency 2 per season            Regressed Volume is 0 to 1 (0)            Regressed Duration is 0 to 0 (0)</p> <p>Qp: 0 cfs with Average Frequency 1 per season            Regressed Volume is 0 to 0 (0)            Regressed Duration is 0 to 0 (0)</p> <p>Qp: 0 cfs with Average Frequency 2 per season            Regressed Volume is 0 to 0 (0)            Regressed Duration is 0 to 0 (0)</p>											
<b>Base Flows (cfs)</b>	0.57 (30.3%)	0.3 (19.7%)	0.12 (49.3%)	0.67 (31.3%)	0.36 (39.2%)	0.15 (46.7%)	0.6 (36.5%)	0.23 (42.7%)	0.1 (48.9%)	0.23 (42.7%)	0.13 (58.2%)	0.52 (43.0%)
<b>Subsistence Flows (cfs)</b>	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)
	Winter			Spring			Summer			Fall		

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

- Notes:
1. Period of Record used : 1/1/1946 to 12/31/2009.
  2. Volumes are in acre-feet and durations are in days.

WNRBracketville19462009



# South Texas Brush perennial

Overbank Events	Frequency 1 per year											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
High Flow Pulses	Qp: 9,130 cfs with Average Frequency 1 per year Regressed Volume is 58,099 to 162,009 (97,018) Regressed Duration is 9 to 28 (16)											
	Qp: 5,420 cfs with Average Frequency 2 per year Regressed Volume is 31,662 to 88,266 (52,864) Regressed Duration is 8 to 24 (14)											
Base Flows (cfs)	Qp: 2,050 cfs with Average Frequency 1 per season Regressed Volume is 9,373 to 26,796 (15,848) Regressed Duration is 6 to 18 (10)											
	Qp: 717 cfs with Average Frequency 2 per season Regressed Volume is 2,963 to 8,463 (5,008) Regressed Duration is 4 to 13 (8)											
Subsistence Flows (cfs)	Qp: 4,090 cfs with Average Frequency 1 per season Regressed Volume is 23,932 to 64,594 (39,317) Regressed Duration is 7 to 22 (12)											
	Qp: 1,660 cfs with Average Frequency 2 per season Regressed Volume is 8,227 to 22,190 (13,511) Regressed Duration is 5 to 16 (9)											
Flow Levels	Qp: 1,100 cfs with Average Frequency 1 per season Regressed Volume is 4,887 to 13,644 (8,141) Regressed Duration is 5 to 15 (8)											
	Qp: 276 cfs with Average Frequency 2 per season Regressed Volume is 897 to 2,520 (1,504) Regressed Duration is 3 to 9 (5)											
Flow Levels	Qp: 2,420 cfs with Average Frequency 1 per season Regressed Volume is 12,885 to 34,214 (20,996) Regressed Duration is 6 to 15 (8)											
	Qp: 706 cfs with Average Frequency 2 per season Regressed Volume is 2,985 to 7,922 (4,863) Regressed Duration is 4 to 13 (7)											
Flow Levels	Qp: 323 cfs with Average Frequency 4 per season Regressed Volume is 1,183 to 3,192 (1,944) Regressed Duration is 3 to 10 (5)											
	Qp: 15 cfs with Average Frequency 4 per season Regressed Volume is 31 to 82 (50) Regressed Duration is 1 to 4 (2)											
Flow Levels	Qp: 104 (38.9%) 38 (61.3%) 12 (81.9%) 0.1 (98.6%)											
	Qp: 57 (51.4%) 30 (65.9%) 6.3 (78.6%) 0.1 (94.3%)											

Notes:  
1. Period of Record used: 1/1/1916 to 12/31/2009.

NRTR19162009



# South Texas brush perennial

Overbank Events	Frequency 1 per year											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
High Flow Pulses	<p>Qp: 3,880 cfs with Average Frequency 1 per year Regressed Volume is 12,353 to 28,347 (18,713) Regressed Duration is 7 to 22 (13)</p> <p>Qp: 1,990 cfs with Average Frequency 2 per year Regressed Volume is 6,437 to 14,767 (9,750) Regressed Duration is 6 to 19 (11)</p>											
	<p>Qp: 725 cfs with Average Frequency 1 per season Regressed Volume is 2,390 to 5,718 (3,697) Regressed Duration is 6 to 18 (11)</p> <p>Qp: 228 cfs with Average Frequency 2 per season Regressed Volume is 818 to 1,955 (1,265) Regressed Duration is 5 to 14 (8)</p>											
	<p>Qp: 1,770 cfs with Average Frequency 1 per season Regressed Volume is 6,156 to 12,451 (8,755) Regressed Duration is 6 to 16 (10)</p> <p>Qp: 600 cfs with Average Frequency 2 per season Regressed Volume is 2,115 to 4,275 (3,007) Regressed Duration is 5 to 13 (8)</p>											
Base Flows (cfs)	<p>Qp: 28 cfs with Average Frequency 4 per season Regressed Volume is 117 to 290 (181) Regressed Duration is 3 to 9 (5)</p>											
	<p>Qp: 70 cfs with Average Frequency 3 per season Regressed Volume is 298 to 669 (485) Regressed Duration is 4 to 12 (8)</p>											
	<p>Qp: 80 cfs with Average Frequency 4 per season Regressed Volume is 289 to 584 (411) Regressed Duration is 3 to 9 (5)</p>											
Subsistence Flows (cfs)	<p>Qp: 253 cfs with Average Frequency 1 per season Regressed Volume is 1,206 to 3,980 (1,206) Regressed Duration is 4 to 12 (7)</p> <p>Qp: 37 cfs with Average Frequency 2 per season Regressed Volume is 104 to 275 (169) Regressed Duration is 2 to 7 (4)</p>											
	<p>Qp: 620 cfs with Average Frequency 1 per season Regressed Volume is 2,144 to 4,323 (3,045) Regressed Duration is 5 to 14 (8)</p> <p>Qp: 102 cfs with Average Frequency 2 per season Regressed Volume is 356 to 717 (505) Regressed Duration is 3 to 9 (6)</p>											
	<p>Qp: 20 cfs with Average Frequency 3 per season Regressed Volume is 40 to 100 (70) Regressed Duration is 1 to 3 (2)</p> <p>Qp: 20 cfs with Average Frequency 3 per season Regressed Volume is 40 to 100 (70) Regressed Duration is 1 to 3 (2)</p>											
<p>Qp: 14 (45.3%) 9 (63.0%) 4.8 (82.8%) 0.05 (99.5%)</p>												
<p>Qp: 8 (44.2%) 3.4 (61.1%) 1.4 (73.4%) 0 (100.0%)</p>												
<p>Qp: 10 (57.0%) 5.4 (72.5%) 2.4 (84.8%) 0 (100.0%)</p>												
<p>Qp: 7.6 (52.0%) 3.6 (68.3%) 1.6 (78.5%) 0 (100.0%)</p>												
<p>Flow Levels</p> <p>High (75th %ile)</p> <p>Medium (50th %ile)</p> <p>Low (25th %ile)</p> <p>Subsistence</p>												

Notes:  
1. Period of Record used : 1/1/1953 to 12/31/2009.

ARW19332009

Overbank Flows	<p>Qp: 13,100 cfs with Average Frequency 1 per 5 years          Regressed Volume is 40,514 to 93,034 (61,393)          Regressed Duration is 10 to 29 (17)</p> <p>Qp: 8,220 cfs with Average Frequency 1 per 2 years          Regressed Volume is 25,706 to 59,013 (38,949)          Regressed Duration is 9 to 26 (15)</p> <p>Qp: 3,880 cfs with Average Frequency 1 per year          Regressed Volume is 12,353 to 28,347 (18,713)          Regressed Duration is 7 to 22 (13)</p>																																																																																																														
	High Flow Pulses	<p>Qp: 725 cfs with Average Frequency 1 per season          Regressed Volume is 2,390 to 5,118 (3,697)          Regressed Duration is 6 to 18 (11)</p>			<p>Qp: 1,770 cfs with Average Frequency 1 per season          Regressed Volume is 6,156 to 12,451 (8,755)          Regressed Duration is 6 to 10</p>			<p>Qp: 253 cfs with Average Frequency 1 per season          Regressed Volume is 742 to 1,960 (1,206)</p>			<p>Qp: 620 cfs with Average Frequency 1 per season          Regressed Volume is 2,144 to 4,323 (3,045)</p>																																																																																																				
Base Flows (cfs)		<p>Qp: 500 cfs with Average Frequency 2 per season          Regressed Volume is 618 to 1,955 (1,318)          Regressed Duration is 5 to 11 (8)</p>			<p>Qp: 500 cfs with Average Frequency 2 per season          Regressed Volume is 2,115 to 4,200 (3,000)          Regressed Duration is 5 to 15 (10)</p>			<p>Qp: 500 cfs with Average Frequency 2 per season          Regressed Volume is 2,115 to 4,200 (3,000)          Regressed Duration is 5 to 15 (10)</p>			<p>Qp: 500 cfs with Average Frequency 2 per season          Regressed Volume is 2,115 to 4,200 (3,000)          Regressed Duration is 5 to 15 (10)</p>																																																																																																				
	Subsistence Flows (cfs)	<p>14 (45.3%)          9 (63.0%)          4.8 (82.8%)          0.05 (99.5%)</p>			<p>10 (57.0%)          5.4 (72.5%)          2.4 (84.8%)          0 (100.0%)</p>			<p>8 (44.2%)          3.4 (61.1%)          1.4 (73.4%)          0 (100.0%)</p>			<p>7.6 (52.0%)          3.6 (68.3%)          1.6 (78.5%)          0 (100.0%)</p>																																																																																																				
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Notes:  
 1. Period of Record used : 1/1/1933 to 12/31/2009.

ARWhitsett19332009



Overbank Flows	<p>Qp: 5,040 cfs with Average Frequency 1 per 5 Years            Regressed Volume is 17,410 to 80,590 (37,457)            Regressed Duration is 14 to 74 (32)</p> <p>Qp: 2,210 cfs with Average Frequency 1 per 2 years            Regressed Volume is 7,306 to 33,757 (15,704)            Regressed Duration is 11 to 57 (25)</p> <p>Qp: 1,050 cfs with Average Frequency 1 per year            Regressed Volume is 3,336 to 15,301 (7,165)            Regressed Duration is 8 to 46 (20)</p>											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
High Flow Pulses	<p>Qp: 9 cfs with Average Frequency 1 per season            Regressed Volume is 31 to 163 (71)            Regressed Duration is 3 to 15 (6)</p> <p>Qp: 21 cfs with Average Frequency 1 per season            Regressed Volume is 52 to 192 (100)            Regressed Duration is 2 to 11 (5)</p> <p>Qp: 2 cfs with Average Frequency 1 per season            Regressed Volume is 5 to 20 (10)            Regressed Duration is 1 to 6 (3)</p> <p>Qp: 11 cfs with Average Frequency 1 per season            Regressed Volume is 26 to 96 (50)            Regressed Duration is 1 to 6 (3)</p>											
Base Flows (cfs)	<p>Qp: 2 cfs with Average Frequency 2 per season            Regressed Volume is 4 to 22 (10)            Regressed Duration is 1 to 8 (5)</p> <p>Qp: 2 cfs with Average Frequency 2 per season            Regressed Volume is 5 to 17 (6)            Regressed Duration is 1 to 6 (3)</p>											
Subsistence Flows (cfs)	<p>Qp: 1 cfs with Average Frequency 1 per season            Regressed Volume is 0 to 2.3 (42.0%)            Regressed Duration is 0 to 1.3 (60.1%)            Regressed Duration is 0 to 0.86 (75.8%)            Regressed Duration is 0 to 0 (100.0%)</p> <p>Qp: 1 cfs with Average Frequency 1 per season            Regressed Volume is 0 to 2.2 (41.7%)            Regressed Duration is 0 to 1.1 (59.9%)            Regressed Duration is 0 to 0.52 (76.1%)            Regressed Duration is 0 to 0 (100.0%)</p> <p>Qp: 1 cfs with Average Frequency 1 per season            Regressed Volume is 0 to 2.1 (41.8%)            Regressed Duration is 0 to 0.93 (59.0%)            Regressed Duration is 0 to 0.52 (73.5%)            Regressed Duration is 0 to 0 (100.0%)</p>											

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1953 to 12/31/2009.  
 2. Volumes are in acre-feet and durations are in days.

SRSabinalBEO19532009



	Flow Data											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
<b>Overbank Flows</b>	<p>Qp: 12,600 cfs with Average Frequency 1 per 5 years            Regressed Volume is 58,521 to 167,583 (99,031)            Regressed Duration is 9 to 34 (18)</p> <p>Qp: 7,320 cfs with Average Frequency 1 per 2 Years            Regressed Volume is 32,879 to 94,115 (55,627)            Regressed Duration is 8 to 31 (16)</p> <p>Qp: 4,140 cfs with Average Frequency 1 per year            Regressed Volume is 17,953 to 51,369 (30,368)            Regressed Duration is 7 to 27 (14)</p>											
<b>High Flow Pulses</b>	<p>Qp: 385 cfs with Average Frequency 1 per season            Regressed Volume is 1,502 to 5,322 (2,827)            Regressed Duration is 5 to 26 (10)</p> <p>Qp: 1,489 cfs with Average Frequency 1 per season            Regressed Volume is 6,323 to 15,750 (9,973)            Regressed Duration is 5 to 18 (10)</p> <p>Qp: 271 cfs with Average Frequency 1 per season            Regressed Volume is 981 to 2,440 (1,547)</p> <p>Qp: 961 cfs with Average Frequency 1 per season            Regressed Volume is 3,719 to 10,368 (6,209)</p>											
<b>Base Flows (cfs)</b>	<p>Qp: 85 cfs with Average Frequency 2 per season            Regressed Volume is 202 to 1,070 (569)            Regressed Duration is 3 to 13 (7)</p> <p>Qp: 55 cfs with Average Frequency 2 per season            Regressed Volume is 1,707 to 4,755 (2,958)            Regressed Duration is 4 to 14 (10)</p> <p>Qp: 36 cfs with Average Frequency 2 per season            Regressed Volume is 111 to 276 (175)</p> <p>Qp: 117 cfs with Average Frequency 2 per season            Regressed Volume is 393 to 1,070 (647)</p>											
<b>Subsistence Flows (cfs)</b>	<p>29 (41.9%)            12 (60.6%)            1.1 (81.7%)            0 (100.0%)</p> <p>25 (49.9%)            7.3 (68.6%)            1.1 (83.1%)            0 (100.0%)</p> <p>14 (42.5%)            2 (61.5%)            0.25 (71.4%)            0 (100.0%)</p> <p>21 (48.2%)            3.2 (67.7%)            0.62 (79.9%)            0 (100.0%)</p>											
	Winter			Spring			Summer			Fall		

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1933 to 12/31/2009.  
 2. Volumes are in acre-feet and durations are in days.

FRTilden19332009

# South Texas Bush intermittent

**Overbank Events**  
 Qp: 4,010 cfs with Average Frequency 1 per year  
 Regressed Volume is 12,756 to 44,691 (23,876)  
 Regressed Duration is 7 to 29 (14)

Qp: 1,670 cfs with Average Frequency 2 per year  
 Regressed Volume is 5,356 to 18,758 (10,023)  
 Regressed Duration is 6 to 25 (12)

**High Flow Pulses**  
 Qp: 87 cfs with Average Frequency 1 per season  
 Regressed Volume is 350 to 1,446 (711)  
 Regressed Duration is 4 to 20 (9)

Qp: 12 cfs with Average Frequency 2 per season  
 Regressed Volume is 47 to 193 (95)  
 Regressed Duration is 3 to 15 (7)

Qp: 902 cfs with Average Frequency 1 per season  
 Regressed Volume is 3,061 to 7,936 (4,928)  
 Regressed Duration is 5 to 17 (9)

Qp: 209 cfs with Average Frequency 2 per season  
 Regressed Volume is 699 to 1,812 (1,126)  
 Regressed Duration is 4 to 14 (7)

Qp: 58 cfs with Average Frequency 1 per season  
 Regressed Volume is 177 to 513 (301)  
 Regressed Duration is 3 to 13 (7)

Qp: 348 cfs with Average Frequency 1 per season  
 Regressed Volume is 1,072 to 4,340 (2,157)  
 Regressed Duration is 5 to 24 (11)

Qp: 7 cfs with Average Frequency 2 per season  
 Regressed Volume is 24 to 97 (48)  
 Regressed Duration is 2 to 12 (5)

Qp: 49 cfs with Average Frequency 3 per season  
 Regressed Volume is 142 to 498 (300)  
 Regressed Duration is 3 to 14 (10)

Qp: 5 cfs with Average Frequency 4 per season  
 Regressed Volume is 16 to 41 (25)  
 Regressed Duration is 2 to 8 (4)

Base Flows (cfs)	Winter											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
26 (34.8%)									16 (30.7%)			
17 (43.9%)								11 (49.2%)	6.8 (38.0%)			
7.9 (53.1%)								2.8 (59.7%)	2.2 (46.2%)			
0 (100.0%)								0 (100.0%)	0 (100.0%)			
Subsistence Flows (cfs)												0 (100.0%)

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1916 to 12/31/2009.

FRD19162009

	Flow Levels															
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct				
	Winter															
	Spring															
	Summer															
	Fall															
<b>Overbank Flows</b>	<p>Qp: 16,400 cfs with Average Frequency 1 per 5 years            Regressed Volume is 51,477 to 180,512 (96,396)            Regressed Duration is 8 to 36 (17)</p> <p>Qp: 7,200 cfs with Average Frequency 1 per 2 years            Regressed Volume is 22,777 to 79,827 (42,640)            Regressed Duration is 7 to 31 (15)</p> <p>Qp: 4,010 cfs with Average Frequency 1 per year            Regressed Volume is 12,756 to 44,691 (23,876)            Regressed Duration is 7 to 29 (14)</p>															
<b>High Flow Pulses</b>	<p>Qp: 87 cfs with Average Frequency 1 per season            Regressed Volume is 1,446 (711)            Regressed Duration is 4 to 20 (9)</p> <p>Qp: 902 cfs with Average Frequency 1 per season            Regressed Volume is 2,061 to 7,935 (4,928)            Regressed Duration is 5 to 17 (9)</p> <p>Qp: 59 cfs with Average Frequency 1 per season            Regressed Volume is 177 to 513 (301)</p> <p>Qp: 348 cfs with Average Frequency 1 per season            Regressed Volume is 1,072 to 4,340 (2,157)</p>															
<b>Base Flows (cfs)</b>	<p>Qp: 12 cfs with Average Frequency 2 per season            Regressed Volume is 47 to 101 (74)</p> <p>Qp: 249 cfs with Average Frequency 2 per season            Regressed Volume is 529 to 1,120 (690)            Regressed Duration is 4 to 14 (9)</p> <p>Qp: 249 cfs with Average Frequency 2 per season            Regressed Volume is 529 to 1,120 (690)            Regressed Duration is 4 to 14 (9)</p>															
<b>Subsistence Flows (cfs)</b>	26 (34.8%)	17 (43.9%)	7.9 (53.1%)	0 (100.0%)	22 (38.3%)	11 (49.2%)	2.8 (59.7%)	0 (100.0%)	16 (30.7%)	6.8 (38.0%)	2.2 (46.2%)	0 (100.0%)	24 (34.9%)	12 (43.2%)	5 (51.1%)	0 (100.0%)

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

- Notes:
1. Period of Record used : 1/1/1916 to 12/31/2009.
  2. Volumes are in acre-feet and durations are in days.

FRDerby19162009

# South Texas Brush intermittent

Overbank Events	Flow Levels											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
High Flow Pulses	<p>Qp: 4,610 cfs with Average Frequency 1 per Year                      Regressed Volume is 24,227 to 77,142 (43,231)                      Regressed Duration is 9 to 33 (17)</p> <p>Qp: 1,640 cfs with Average Frequency 2 per Year                      Regressed Volume is 7,964 to 25,348 (14,208)                      Regressed Duration is 7 to 27 (14)</p> <p>Qp: 298 cfs with Average Frequency 1 per season                      Regressed Volume is 1,408 to 4,606 (2,547)                      Regressed Duration is 6 to 22 (12)</p> <p>Qp: 87 cfs with Average Frequency 2 per season                      Regressed Volume is 384 to 1,255 (694)                      Regressed Duration is 5 to 18 (9)</p> <p>Qp: 89 cfs with Average Frequency 3 per season                      Regressed Volume is 1,180 to 3,362 (1,992)                      Regressed Duration is 5 to 18 (9)</p> <p>Qp: 322 cfs with Average Frequency 1 per season                      Regressed Volume is 1,396 to 4,392 (2,476)                      Regressed Duration is 6 to 21 (11)</p> <p>Qp: 11 cfs with Average Frequency 2 per season                      Regressed Volume is 30 to 96 (54)                      Regressed Duration is 10 to 10 (5)</p> <p>Qp: 836 cfs with Average Frequency 1 per season                      Regressed Volume is 3,877 to 10,884 (6,496)                      Regressed Duration is 6 to 23 (12)</p> <p>Qp: 218 cfs with Average Frequency 2 per season                      Regressed Volume is 851 to 2,386 (1,425)                      Regressed Duration is 4 to 15 (8)</p>											
	Base Flows (cfs)	42 (34.3%)	1.1 (55.8%)	0.2 (74.4%)	0 (100.0%)	25 (45.0%)	3.3 (59.7%)	0.1 (75.2%)	0 (100.0%)	14 (40.1%)	0.83 (56.1%)	0.17 (64.4%)
Subsistence Flows (cfs)	42 (34.3%)	1.1 (55.8%)	0.2 (74.4%)	0 (100.0%)	25 (45.0%)	3.3 (59.7%)	0.1 (75.2%)	0 (100.0%)	14 (40.1%)	0.83 (56.1%)	0.17 (64.4%)	0 (100.0%)

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1943 to 12/31/2009.

NRT19432009

Overbank Flows	<p>Qp: 24,500 cfs with Average Frequency 1 per 5 years            Regressed Volume is 146,267 to 466,188 (261,128)            Regressed Duration is 12 to 44 (23)</p> <p>Qp: 10,700 cfs with Average Frequency 1 per 2 years            Regressed Volume is 59,966 to 191,027 (107,029)            Regressed Duration is 10 to 38 (20)</p> <p>Qp: 4,610 cfs with Average Frequency 1 per Year            Regressed Volume is 24,227 to 77,142 (43,231)            Regressed Duration is 9 to 33 (17)</p>															
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct				
High Flow Pulses	<p>Qp: 298 cfs with Average Frequency 1 per season            Regressed Volume is 1,408 to 4,606 (2,547)            Regressed Duration is 6 to 22 (12)</p> <p>Qp: 881 cfs with Average Frequency 1 per season            Regressed Volume is 4,285 to 12,219 (7,236)            Regressed Duration is 6 to 22 (12)</p> <p>Qp: 322 cfs with Average Frequency 1 per season            Regressed Volume is 1,396 to 4,392 (2,476)</p> <p>Qp: 836 cfs with Average Frequency 1 per season            Regressed Volume is 3,877 to 10,884 (6,496)</p>															
	<p>Qp: 87 cfs with Average Frequency 2 per season            Regressed Volume is 384 to 1,255 (435)            Regressed Duration is 5 to 14 (9)</p> <p>Qp: 219 cfs with Average Frequency 2 per season            Regressed Volume is 1,100 to 3,310 (1,100)            Regressed Duration is 5 to 16 (10)</p> <p>Qp: 216 cfs with Average Frequency 2 per season            Regressed Volume is 884 to 2,386 (1,423)</p>															
Base Flows (cfs)	42 (34.3%)	1.1 (55.8%)	0.2 (74.4%)	0 (100.0%)	25 (45.0%)	3.3 (59.7%)	0.1 (75.2%)	0 (100.0%)	14 (40.1%)	0.83 (56.1%)	0.17 (64.4%)	0 (100.0%)	42 (47.9%)	12 (60.0%)	0.34 (77.3%)	0 (100.0%)
Subsistence Flows (cfs)	0 (100.0%)															
<p>Winter</p> <p>Spring</p> <p>Summer</p> <p>Fall</p>																

Flow Levels	
High (75th %ile)	
Medium (50th %ile)	
Low (25th %ile)	
Subsistence	

Notes:  
 1. Period of Record used : 1/1/1943 to 12/31/2009.  
 2. Volumes are in acre-feet and durations are in days.

NRTilden19432009

# South Texas Brush intermittent

Overbank Events	Flow Levels															
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct				
High Flow Pulses	<p>Qp: 4,460 cfs with Average Frequency 1 per year Regressed Volume is 22,779 to 73,993 (41,055) Regressed Duration is 8 to 34 (17)</p> <p>Qp: 1,560 cfs with Average Frequency 2 per year Regressed Volume is 7,439 to 24,155 (13,405) Regressed Duration is 7 to 28 (14)</p> <p>Qp: 103 cfs with Average Frequency 1 per season Regressed Volume is 376 to 1,027 (622) Regressed Duration is 4 to 16 (8)</p> <p>Qp: 644 cfs with Average Frequency 1 per season Regressed Volume is 2,952 to 8,609 (5,041) Regressed Duration is 6 to 26 (12)</p> <p>Qp: 1,180 cfs with Average Frequency 1 per season Regressed Volume is 5,654 to 17,154 (9,848) Regressed Duration is 7 to 24 (13)</p> <p>Qp: 192 cfs with Average Frequency 2 per season Regressed Volume is 782 to 2,370 (1,361) Regressed Duration is 5 to 17 (9)</p> <p>Qp: 96 cfs with Average Frequency 1 per season Regressed Volume is 438 to 1,572 (830) Regressed Duration is 5 to 20 (10)</p> <p>Qp: 8 cfs with Average Frequency 2 per season Regressed Volume is 29 to 104 (55) Regressed Duration is 3 to 13 (6)</p> <p>Qp: 0 cfs with Average Frequency 4 per season Regressed Volume is 0 to 1 (0) Regressed Duration is 1 to 6 (3)</p>															
	Base Flows (cfs)	38 (29.9%)	6.2 (39.6%)	0.33 (52.2%)	0 (100.0%)	30 (36.4%)	10 (44.2%)	1.3 (53.3%)	0 (100.0%)	32 (30.5%)	6.9 (37.3%)	0.49 (43.5%)	0 (100.0%)	42 (38.7%)	15 (46.7%)	1.3 (56.2%)
Subsistence Flows (cfs)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)	0 (100.0%)

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
1. Period of Record used: 1/1/1927 to 12/31/2009.

NRC19272009

Overbank Flows	<p>Qp: 15,100 cfs with Average Frequency 1 per 5 years          Regressed Volume is 83,509 to 271,431 (150,555)          Regressed Duration is 10 to 42 (21)</p> <p>Qp: 8,410 cfs with Average Frequency 1 per 2 years          Regressed Volume is 44,768 to 145,466 (80,699)          Regressed Duration is 9 to 38 (19)</p> <p>Qp: 4,460 cfs with Average Frequency 1 per year          Regressed Volume is 22,779 to 73,993 (41,655)          Regressed Duration is 8 to 34 (17)</p>																																																										
	High Flow Pulses	<p>Qp: 96 cfs with Average Frequency 1 per season          Regressed Volume is 438 to 1,572 (850)          Regressed Duration is 5 to 20 (10)</p>			<p>Qp: 1,180 cfs with Average Frequency 1 per season          Regressed Volume is 5,654 to 17,154 (9,848)          Regressed Duration is 7 to 24 (17)</p>			<p>Qp: 103 cfs with Average Frequency 1 per season          Regressed Volume is 376 to 1,027 (622)</p>			<p>Qp: 644 cfs with Average Frequency 1 per season          Regressed Volume is 2,952 to 8,609 (5,041)</p>																																																
Base Flows (cfs)		<p>Qp: 8 cfs with Average Frequency 2 per season          Regressed Volume is 25 to 104 (65)          Regressed Duration is 3 to 10 (7)</p>			<p>Qp: 103 cfs with Average Frequency 2 per season          Regressed Volume is 3,370 (1,360)          Regressed Duration is 5 to 17 (12)</p>			<p>Qp: 35 cfs with Average Frequency 2 per season          Regressed Volume is 123 to 358 (240)</p>																																																			
	Subsistence Flows (cfs)	<p>38 (29.9%)          6.2 (39.6%)          0.33 (52.2%)          0 (100.0%)</p>			<p>30 (36.4%)          10 (44.2%)          1.3 (53.3%)          0 (100.0%)</p>			<p>32 (30.5%)          6.9 (37.3%)          0.49 (43.5%)          0 (100.0%)</p>			<p>42 (38.7%)          15 (46.7%)          1.3 (56.2%)          0 (100.0%)</p>																																																
<table border="1"> <thead> <tr> <th>Nov</th> <th>Dec</th> <th>Jan</th> <th>Feb</th> <th>Mar</th> <th>Apr</th> <th>May</th> <th>Jun</th> <th>Jul</th> <th>Aug</th> <th>Sep</th> <th>Oct</th> </tr> <tr> <th colspan="12">Winter</th> </tr> <tr> <th colspan="6">Spring</th> <th colspan="6">Summer</th> </tr> <tr> <th colspan="12">Fall</th> </tr> </thead> </table>												Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Winter												Spring						Summer						Fall											
Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct																																																
Winter																																																											
Spring						Summer																																																					
Fall																																																											

Flow Levels	High (75th %ile)
	Medium (50th %ile)
	Low (25th %ile)
	Subsistence

Notes:  
 1. Period of Record used : 1/1/1927 to 12/31/2009.  
 2. Volumes are in acre-feet and durations are in days.

NRCotulla19272009

# South Texas Brush intermittent

**Overbank Events**

Qp: 2,550 cfs with Average Frequency 1 per Year  
 Regressed Volume is 8,237 to 46,290 (19,527)  
 Regressed Duration is 7 to 49 (18)

Qp: 512 cfs with Average Frequency 2 per year  
 Regressed Volume is 1,469 to 8,235 (3,478)  
 Regressed Duration is 4 to 26 (10)

Qp: 13 cfs with Average Frequency 1 per season  
 Regressed Volume is 24 to 252 (77)  
 Regressed Duration is 1 to 9 (3)

Qp: 110 cfs with Average Frequency 1 per season  
 Regressed Volume is 303 to 1,276 (622)  
 Regressed Duration is 2 to 11 (5)

Qp: 15 cfs with Average Frequency 1 per season  
 Regressed Volume is 37 to 142 (72)  
 Regressed Duration is 1 to 5 (2)

Qp: 50 cfs with Average Frequency 1 per season  
 Regressed Volume is 116 to 686 (282)  
 Regressed Duration is 1 to 11 (4)

**High Flow Pulses**

Qp: 20 cfs with Average Frequency 2 per season  
 Regressed Volume is 47 to 201 (98)  
 Regressed Duration is 1 to 6 (3)

Base Flows (cfs)	Winter			Spring			Summer			Fall		
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
35 (44.7%)							38 (41.1%)		32 (43.4%)		37 (45.0%)	
22 (60.7%)							20 (59.3%)		17 (59.7%)		19 (62.0%)	
12 (77.6%)							12 (77.3%)		8.8 (76.5%)		9.3 (78.6%)	
0 (100.0%)							0 (100.0%)		0 (100.0%)		0 (100.0%)	

**Subsistence Flows (cfs)**

Flow Levels	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
High (75th %ile)												
Medium (50th %ile)												
Low (25th %ile)												
Subsistence												

Notes:  
 1. Period of Record used : 3/1/1940 to 12/31/2009.

NRU19402009

Overbank Flows	<p>Qp: 18,700 cfs with Average Frequency 1 per 5 years            Regressed Volume is 69,889 to 395,080 (166,168)            Regressed Duration is 15 to 108 (40)</p> <p>Qp: 6,920 cfs with Average Frequency 1 per 2 Years            Regressed Volume is 24,053 to 135,513 (57,092)            Regressed Duration is 10 to 73 (27)</p> <p>Qp: 2,550 cfs with Average Frequency 1 per year            Regressed Volume is 8,237 to 46,290 (19,527)            Regressed Duration is 7 to 49 (18)</p>											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
High Flow Pulses	<p>Qp: 13 cfs with Average Frequency 1 per season            Regressed Volume is 24 to 252 (77)            Regressed Duration is 1 to 9 (5)</p> <p>Qp: 110 cfs with Average Frequency 1 per season            Regressed Volume is 303 to 1,276 (622)            Regressed Duration is 2 to 11 (5)</p> <p>Qp: 15 cfs with Average Frequency 1 per season            Regressed Volume is 37 to 142 (72)            Regressed Duration is 116 to 686 (282)</p>											
	<p>Qp: 20 cfs with Average Frequency 2 per season            Regressed Volume is 47 to 201 (66)            Regressed Duration is 4 to 6 (3)</p>											
Base Flows (cfs)	35 (44.7%)	22 (60.7%)	12 (77.6%)	0 (100.0%)	38 (41.1%)	20 (59.3%)	12 (77.3%)	0 (100.0%)	32 (43.4%)	17 (59.7%)	8.8 (76.5%)	0 (100.0%)
Subsistence Flows (cfs)												
<p>Flow Levels</p> <p>High (75th %ile)</p> <p>Medium (50th %ile)</p> <p>Low (25th %ile)</p> <p>Subsistence</p>												

Notes:  
 1. Period of Record used : 1/1/1940 to 12/31/2009.  
 2. Volumes are in acre-feet and durations are in days.

NRUvalde19402009



	Winter			Spring			Summer			Fall		
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
<b>Overbank Flows</b>	<p>Qp: 8,180 cfs with Average Frequency 1 per 5 years            Regressed Volume is 19,800 to 55,895 (33,268)            Regressed Duration is 6 to 23 (12)</p> <p>Qp: 3,970 cfs with Average Frequency 1 per 2 years            Regressed Volume is 9,882 to 27,880 (16,598)            Regressed Duration is 6 to 21 (11)</p> <p>Qp: 2,210 cfs with Average Frequency 1 per year            Regressed Volume is 5,627 to 15,868 (9,449)            Regressed Duration is 5 to 20 (11)</p>											
<b>High Flow Pulses</b>	<p>Qp: 162 cfs with Average Frequency 1 per season            Regressed Volume is 480 to 1,577 (871)            Regressed Duration is 4 to 19 (9)</p> <p>Qp: 685 cfs with Average Frequency 1 per season            Regressed Volume is 2,438 to 4,940 (3,488)            Regressed Duration is 5 to 16 (9)</p> <p>Qp: 156 cfs with Average Frequency 1 per season            Regressed Volume is 439 to 1,036 (575)            Regressed Duration is 5 to 16 (9)</p> <p>Qp: 303 cfs with Average Frequency 1 per season            Regressed Volume is 802 to 2,006 (1,268)            Regressed Duration is 5 to 16 (9)</p>											
<b>Base Flows (cfs)</b>	<p>Qp: 45 cfs with Average Frequency 2 per season            Regressed Volume is 145 to 474 (262)            Regressed Duration is 4 to 16 (8)</p> <p>Qp: 43 cfs with Average Frequency 2 per season            Regressed Volume is 622 to 1,564 (1,010)            Regressed Duration is 4 to 16 (8)</p> <p>Qp: 16 cfs with Average Frequency 2 per season            Regressed Volume is 14 to 102 (73)            Regressed Duration is 4 to 16 (8)</p>											
<b>Subsistence Flows (cfs)</b>	<p>3.4 (36.2%)            2 (48.7%)            0.95 (60.2%)            0 (100.0%)</p> <p>4.4 (44.2%)            2 (54.1%)            0.36 (64.6%)            0 (100.0%)</p> <p>2.6 (36.2%)            1.3 (43.6%)            0.22 (52.2%)            0 (100.0%)</p> <p>3.6 (37.0%)            1.8 (45.7%)            0.23 (55.4%)            0 (100.0%)</p>											

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1965 to 12/31/2009.  
 2. Volumes are in acre-feet and durations are in days.

SMCTilden19652009

# Coastal perennial

Overbank Events	Flow Data															
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct				
High Flow Pulses	<p>Qp: 7,690 cfs with Average Frequency 1 per year Regressed Volume is 56,116 to 184,549 (101,766) Regressed Duration is 9 to 31 (17)</p> <p>Qp: 4,090 cfs with Average Frequency 2 per year Regressed Volume is 25,252 to 82,986 (45,777) Regressed Duration is 7 to 23 (13)</p> <p>Qp: 1,120 cfs with Average Frequency 1 per season Regressed Volume is 4,466 to 14,165 (7,954) Regressed Duration is 4 to 12 (7)</p> <p>Qp: 591 cfs with Average Frequency 2 per season Regressed Volume is 1,979 to 6,271 (3,823) Regressed Duration is 3 to 9 (5)</p> <p>Qp: 2,540 cfs with Average Frequency 1 per season Regressed Volume is 15,558 to 49,395 (27,721) Regressed Duration is 6 to 19 (10)</p> <p>Qp: 422 cfs with Average Frequency 2 per season Regressed Volume is 1,605 to 5,087 (2,857) Regressed Duration is 3 to 9 (5)</p> <p>Qp: 371 cfs with Average Frequency 1 per season Regressed Volume is 1,525 to 4,967 (2,752) Regressed Duration is 3 to 10 (5)</p> <p>Qp: 150 cfs with Average Frequency 2 per season Regressed Volume is 506 to 1,650 (913) Regressed Duration is 2 to 6 (4)</p> <p>Qp: 1,550 cfs with Average Frequency 1 per season Regressed Volume is 7,571 to 24,681 (13,670) Regressed Duration is 4 to 10 (5)</p> <p>Qp: 239 cfs with Average Frequency 2 per season Regressed Volume is 819 to 2,670 (1,478) Regressed Duration is 2 to 7 (4)</p>															
	Base Flows (cfs)	<p>Qp: 288 cfs with Average Frequency 4 per season Regressed Volume is 192 to 2,509 (1,410) Regressed Duration is 2 to 6 (3)</p> <p>Qp: 145 cfs with Average Frequency 4 per season Regressed Volume is 415 to 1,316 (739) Regressed Duration is 2 to 5 (3)</p>														
Subsistence Flows (cfs)	122 (39.9%)	96 (58.8%)	70 (76.2%)	36 (95.1%)	148 (47.9%)	119 (64.8%)	89 (81.8%)	36 (98.2%)	170 (44.1%)	136 (62.5%)	101 (80.6%)	39 (98.9%)	142 (50.2%)	114 (66.0%)	88 (82.8%)	37 (98.1%)
Flow Levels	<p>High (75th %ile)</p> <p>Medium (50th %ile)</p> <p>Low (25th %ile)</p> <p>Subsistence</p>															

Notes:  
1. Period of Record used: 1/1/1940 to 12/31/2009.

NRM19402009

<b>Overbank Flows</b>	<p>Qp: 22,700 cfs with Average Frequency 1 per 5 years          Regressed Volume is 220,578 to 726,574 (400,333)          Regressed Duration is 15 to 51 (28)</p> <p>Qp: 12,900 cfs with Average Frequency 1 per 2 years          Regressed Volume is 107,946 to 355,249 (195,825)          Regressed Duration is 12 to 40 (21)</p> <p>Qp: 7,690 cfs with Average Frequency 1 per year          Regressed Volume is 56,116 to 184,549 (101,766)          Regressed Duration is 9 to 31 (17)</p>											
	<p>Qp: 1,120 cfs with Average Frequency 1 per season          Regressed Volume is 4,746 to 14,165 (7,954)          Regressed Duration is 4 to 12 (7)</p>			<p>Qp: 2,540 cfs with Average Frequency 1 per season          Regressed Volume is 15,558 to 49,395 (27,721)          Regressed Duration is 6 to 19 (10)</p>			<p>Qp: 371 cfs with Average Frequency 1 per season          Regressed Volume is 1,525 to 4,967 (2,752)</p>			<p>Qp: 1,550 cfs with Average Frequency 1 per season          Regressed Volume is 7,571 to 23,000 (12,714)</p>		
<b>High Flow Pulses</b>	<p>Qp: 591 cfs with Average Frequency 2 per season          Regressed Volume is 1,979 to 6,271 (3,153)          Regressed Duration is 3 to 6 (4)</p>											
	<p>Qp: 492 cfs with Average Frequency 2 per season          Regressed Volume is 1,605 to 5,067 (2,857)          Regressed Duration is 3 to 9 (6)</p>											
<b>Base Flows (cfs)</b>	122 (39.9%)	148 (47.9%)	170 (44.1%)	142 (50.2%)								
	96 (58.8%)	119 (64.8%)	136 (62.5%)	114 (66.0%)								
<b>Subsistence Flows (cfs)</b>	70 (76.2%)	89 (81.8%)	101 (80.6%)	88 (82.8%)								
	36 (95.1%)	36 (98.2%)	39 (98.9%)	37 (98.1%)								
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	Winter			Spring			Summer			Fall		

<b>Flow Levels</b>
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1940 to 12/31/2009.

NRMathis19402009

# Coastal perennial

Overbank Events	Flow Levels														
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct			
High Flow Pulses	<p>Qp: 1,320 cfs with Average Frequency 1 per year Regressed Volume is 3,937 to 9,015 (5,958) Regressed Duration is 8 to 23 (13)</p> <p>Qp: 663 cfs with Average Frequency 2 per year Regressed Volume is 2,005 to 4,588 (3,033) Regressed Duration is 7 to 19 (11)</p> <p>Qp: 227 cfs with Average Frequency 1 per season Regressed Volume is 676 to 1,479 (1,000) Regressed Duration is 5 to 13 (8)</p> <p>Qp: 48 cfs with Average Frequency 2 per season Regressed Volume is 149 to 325 (220) Regressed Duration is 4 to 9 (6)</p> <p>Qp: 220 cfs with Average Frequency 1 per season Regressed Volume is 681 to 1,601 (1,052) Regressed Duration is 6 to 17 (10)</p> <p>Qp: 59 cfs with Average Frequency 2 per season Regressed Volume is 196 to 453 (298) Regressed Duration is 4 to 13 (7)</p> <p>Qp: 21 cfs with Average Frequency 1 per season Regressed Volume is 62 to 155 (98) Regressed Duration is 3 to 8 (5)</p> <p>Qp: 64 cfs with Average Frequency 2 per season Regressed Volume is 211 to 449 (308) Regressed Duration is 4 to 11 (6)</p> <p>Qp: 364 cfs with Average Frequency 1 per season Regressed Volume is 1,148 to 2,450 (1,677) Regressed Duration is 5 to 15 (9)</p>														
	Base Flows (cfs)	2.4 (46.9%)	1.8 (67.1%)	1.4 (85.5%)	0.79 (99.1%)	0.74 (94.8%)	2.3 (48.3%)	1.7 (64.3%)	1.3 (80.3%)	2.1 (42.1%)	1.5 (61.7%)	1.2 (76.5%)	2.1 (63.6%)	1.6 (79.0%)	1.3 (87.9%)
Subsistence Flows (cfs)	2.4 (46.9%)	1.8 (67.1%)	1.4 (85.5%)	0.79 (99.1%)	0.74 (94.8%)	2.3 (48.3%)	1.7 (64.3%)	1.3 (80.3%)	2.1 (42.1%)	1.5 (61.7%)	1.2 (76.5%)	2.1 (63.6%)	1.6 (79.0%)	1.3 (87.9%)	0.8 (98.6%)

Flow Levels	High (75th %ile)	Medium (50th %ile)	Low (25th %ile)	Subsistence
High (75th %ile)	2.4 (46.9%)	1.8 (67.1%)	1.4 (85.5%)	0.79 (99.1%)
Medium (50th %ile)	1.8 (67.1%)	1.4 (85.5%)	0.79 (99.1%)	0.74 (94.8%)
Low (25th %ile)	1.4 (85.5%)	0.79 (99.1%)	0.74 (94.8%)	0.74 (94.8%)
Subsistence	0.79 (99.1%)	0.74 (94.8%)	0.74 (94.8%)	0.74 (94.8%)

Notes:  
1. Period of Record used: 1/1/1973 to 12/31/2009.

OCC19732009

Overbank Flows	<p>Qp: 3,550 cfs with Average Frequency 1 per 5 Years            Regressed Volume is 10,380 to 23,790 (15,714)            Regressed Duration is 10 to 28 (17)</p> <p>Qp: 2,500 cfs with Average Frequency 1 per 2 Years            Regressed Volume is 7,362 to 16,866 (11,143)            Regressed Duration is 9 to 26 (15)</p> <p>Qp: 1,320 cfs with Average Frequency 1 per year            Regressed Volume is 3,537 to 5,015 (5,058)            Regressed Duration is 8 to 23 (13)</p>													
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct		
High Flow Pulses	<p>Qp: 220 cfs with Average Frequency 1 per season            Regressed Volume is 691 to 1,601 (1,7052)            Regressed Duration is 6 to 17 (10)</p> <p>Qp: 227 cfs with Average Frequency 1 per season            Regressed Volume is 676 to 1,479 (1,000)            Regressed Duration is 5 to 15 (8)</p> <p>Qp: 21 cfs with Average Frequency 1 per season            Regressed Volume is 62 to 155 (98)            Regressed Volume is 1,148 to 2,450 (1,677)</p>													
	<p>Qp: 50 cfs with Average Frequency 2 per season            Regressed Volume is 170 to 450 (270)            Regressed Duration is 4 to 10 (7)</p> <p>Qp: 6 cfs with Average Frequency 2 per season            Regressed Volume is 15 to 30 (24)            Regressed Volume is 210 to 410 (200)</p>													
Base Flows (cfs)	2.4 (46.9%)	1.8 (67.1%)	1.4 (85.5%)	0.79 (99.1%)	2.3 (48.3%)	1.7 (64.3%)	1.3 (80.3%)	2.1 (42.1%)	1.5 (61.9%)	1.2 (76.5%)	0.74 (93.8%)	2.1 (63.6%)	1.6 (79.0%)	1.3 (87.9%)
Subsistence Flows (cfs)	0.74 (93.8%)													
<p>Winter</p> <p>Spring</p> <p>Summer</p> <p>Fall</p>														

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1973 to 12/31/2009.

OCCorpus19732009



	Flow Data															
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct				
	Winter															
	Spring															
	Summer															
	Fall															
<b>Overbank Flows</b>	<p>Op: 3,350 cfs with Average Frequency 1 per 5 Years            Regressed Volume is 6,752 to 21,840 (12,144)            Regressed Duration is 9 to 35 (18)</p> <p>Op: 1,120 cfs with Average Frequency 1 per 2 years            Regressed Volume is 2,394 to 7,710 (4,297)            Regressed Duration is 7 to 27 (14)</p> <p>Op: 522 cfs with Average Frequency 1 per Year            Regressed Volume is 1,162 to 3,734 (2,083)            Regressed Duration is 6 to 22 (11)</p>															
<b>High Flow Pulses</b>	<p>Op: 14 cfs with Average Frequency 1 per season            Regressed Volume is 42 to 150 (79)            Regressed Duration is 3 to 12 (6)</p> <p>Op: 87 cfs with Average Frequency 1 per season            Regressed Volume is 196 to 610 (346)            Regressed Duration is 3 to 10 (6)</p> <p>Op: 8 cfs with Average Frequency 1 per season            Regressed Volume is 20 to 59 (35)            Regressed Duration is 1 to 184 (109)</p> <p>Op: 23 cfs with Average Frequency 1 per season            Regressed Volume is 64 to 184 (109)</p>															
<b>Base Flows (cfs)</b>	<p>Op: 6 cfs with Average Frequency 2 per season            Regressed Volume is 15 to 49 (31)            Regressed Duration is 2 to 8 (4)</p> <p>Op: 15 cfs with Average Frequency 2 per season            Regressed Volume is 30 to 108 (67)            Regressed Duration is 2 to 8 (4)</p> <p>Op: 3 cfs with Average Frequency 2 per season            Regressed Volume is 3 to 23 (13)            Regressed Duration is 1 to 10 (6)</p> <p>Op: 7 cfs with Average Frequency 2 per season            Regressed Volume is 20 to 57 (38)            Regressed Duration is 1 to 10 (6)</p>															
<b>Subsistence Flows (cfs)</b>	2.1 (45.9%)	1.8 (53.7%)	1.4 (84.7%)	0.94 (98.5%)	2 (49.8%)	1.7 (69.6%)	1.4 (85.6%)	0.87 (97.2%)	2 (44.4%)	1.6 (63.8%)	1.3 (77.2%)	0.8 (92.7%)	2.2 (53.7%)	1.8 (68.6%)	1.4 (82.7%)	0.79 (96.4%)

Flow Levels
High (75th %ile)
Medium (50th %ile)
Low (25th %ile)
Subsistence

Notes:  
 1. Period of Record used : 1/1/1965 to 3/5/1987.

SFCALice19652009